

7/1330
Table 1. Sequence of LoxP Sites

LoxP WT	5'-ATAACTTCGTATAATGTATGCTATACGAAGTTAT-3'
[SEQ ID NO: 1]	
LoxP511	5'-ATAACTTCGTATAGTATACATTATACGAAGTTAT-3'
[SEQ ID NO: 2]	
LoxC2	5'-ACAACTTCGTATAATGTATGCTATACGAAGTTAT-3'
[SEQ ID NO: 3]	
LoxP1	5'-ATAACTTCGTATAATATATGCTATACGAAGTTAT-3'
[SEQ ID NO: 4]	
LoxP2	5'-ATAACTTCGTATAGCATACATTATACGAAGTTAT-3'
[SEQ ID NO: 5]	
LoxP3	5'-ATAACTTCGTATAATGTATACTATACGAAGTTAT-3'
[SEQ ID NO: 6]	
LoxP4	5'-ATAACTTCGTATAATATAAACTATACGAAGTTAT-3'
[SEQ ID NO: 7]	
LoxP5	5'-ATAACTTCGTATAATCTAACCTATACGAAGTTAT-3'
[SEQ ID NO: 8]	
LoxP6	5'-ATAACTTCGTATAACATAGCCTATACGAAGTTAT-3'
[SEQ ID NO: 9]	
LoxP7	5'-ATAACTTCGTATAACATACCCTATACGAAGTTAT-3'
[SEQ ID NO: 10]	
LoxP8	5'-ATTACCTCGTATAGCATACATTATACGAAGTTAT-3'
[SEQ ID NO: 11]	
LoxP9	5'-ATAACTTCGTATAGCATACATTATATGAAGTTAT-3'
[SEQ ID NO: 12]	
LoxP10	5'-ATTACCTCGTATAGCATACATTATATGAAGTTAT-3'
[SEQ ID NO: 13]	

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Table 2. Sequence of PCR primers for amplifying heavy- and light-chain genes of human antibody.

(B= C/G/T; D= A/G/T; K= G/T; M= A/C; R= A/G; S= C/G; W= A/T; and Y= C/T)

a) Heavy-chain VH

5'-primers (back primers):

VH1b: 5'-ACC CCA CCA AAC CCA AAA AAA GAG ATC TGT ATG GCT
TAC CCA TAC GAT GTT CCA GAT TAC CAG GTG CAG CTG CAG GAG
TCS G-3' [SEQ ID NO: 14]

VH2b: 5'-ACC CCA CCA AAC CCA AAA AAA GAG ATC TGT ATG GCT
TAC CCA TAC GAT GTT CCA GAT TAC CAG GTA CAG CTG CAG CAG
TCA-3' [SEQ ID NO: 15]

VH3b: 5'-ACC CCA CCA AAC CCA AAA AAA GAG ATC TGT ATG GCT
TAC CCA TAC GAT GTT CCA GAT TAC CAG GTG CAG CTA CAG CAG
TGG G-3' [SEQ ID NO: 16]

VH4b: 5'-ACC CCA CCA AAC CCA AAA AAA GAG ATC TGT ATG GCT
TAC CCA TAC GAT GTT CCA GAT TAC GAG GTG CAG CTG KTG GAG
WCY-3' [SEQ ID NO: 17]

VH5b: 5'-ACC CCA CCA AAC CCA AAA AAA GAG ATC TGT ATG GCT
TAC CCA TAC GAT GTT CCA GAT TAC CAG GTC CAG CTK GTR CAG
TCT GG-3' [SEQ ID NO: 18]

VH6b: 5'-ACC CCA CCA AAC CCA AAA AAA GAG ATC TGT ATG GCT
TAC CCA TAC GAT GTT CCA GAT TAC CAG RTC ACC TTG AAG GAG
TCT G-3' [SEQ ID NO: 19]

VH7b: 5'-ACC CCA CCA AAC CCA AAA AAA GAG ATC TGT ATG GCT
TAC CCA TAC GAT GTT CCA GAT TAC CAG GTG CAG CTG GTG SAR
TCT GG-3' [SEQ ID NO: 20]

3'-primers (forward primers):

VH1f: 5'-ACT GCC TCC ACC ACC GCT GCC ACC TCC GCC AGA TCC
TCC GCC GCC TGA TCC ACC ACC GCC TGA GGA GAC RGT GAC CAG
GGT G-3' [SEQ ID NO: 21]

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VH2f: 5'-ACT GCC TCC ACC ACC GCT GCC ACC TCC GCC AGA TCC
TCC GCC GCC TGA TCC ACC ACC GCC TGA GGA GAC GGT GAC CAG
GGT T-3' [SEQ ID NO: 22]

VH3f: 5'-ACT GCC TCC ACC ACC GCT GCC ACC TCC GCC AGA TCC
TCC GCC GCC TGA TCC ACC ACC GCC TGA AGA GAC GGT GAC CAT
TGT-3' [SEQ ID NO: 23]

VH4f: 5'-ACT GCC TCC ACC ACC GCT GCC ACC TCC GCC AGA TCC
TCC GCC GCC TGA TCC ACC ACC GCC TGA GGA GAC GGT GAC CGT
GGT CC-3' [SEQ ID NO: 24]

VH5f: 5'-ACT GCC TCC ACC ACC GCT GCC ACC TCC GCC AGA TCC
TCC GCC GCC TGA TCC ACC ACC GCC GGT TGG GGC GGA TGC ACT
CC-3' [SEQ ID NO: 25]

VH6f: 5'-ACT GCC TCC ACC ACC GCT GCC ACC TCC GCC AGA TCC
TCC GCC GCC TGA TCC ACC ACC GCC SGA TGG GCC CTT GGT GGA
RGC-3' [SEQ ID NO: 26]

b) Light-chain Vλ

5'-primers (back primers):

Vλ1b: 5'-GGC GGT GGT GGA TCA GGC GGC GGA GGA TCT GGC GGA
GGT GGC AGC GGT GGT GGA GGC AGT CAG TCT GTS BTG ACG CAG
CCG CC-3' [SEQ ID NO: 27]

Vλ2b: 5'-GGC GGT GGT GGA TCA GGC GGC GGA GGA TCT GGC GGA
GGT GGC AGC GGT GGT GGA GGC AGT TCC TAT GWG CTG ACW CAG
CCA C-3' [SEQ ID NO: 28]

Vλ3b: 5'-GGC GGT GGT GGA TCA GGC GGC GGA GGA TCT GGC GGA
GGT GGC AGC GGT GGT GGA GGC AGT TCC TAT GAG CTG AYR CAG
CYA CC-3' [SEQ ID NO: 29]

Vλ4b: 5'-GGC GGT GGT GGA TCA GGC GGC GGA GGA TCT GGC GGA
GGT GGC AGC GGT GGT GGA GGC AGT CAG CCT GTG CTG ACT CAR
YC-3' [SEQ ID NO: 30]

Vλ5b: 5'-GGC GGT GGT GGA TCA GGC GGC GGA GGA TCT GGC GGA
GGT GGC AGC GGT GGT GGA GGC AGT CAG DCT GTG GTG ACY CAG
GAG CC-3' [SEQ ID NO: 31]

Vλ6b: 5'-GGC GGT GGT GGA TCA GGC GGC GGA GGA TCT GGC GGA
GGT GGC AGC GGT GGT GGA GGC AGT CAG CCW GKG CTG ACT CAG
CCM CC-3' [SEQ ID NO: 32]

Vλ7b: 5'-GGC GGT GGT GGA TCA GGC GGC GGA GGA TCT GGC GGA
GGT GGC AGC GGT GGT GGA GGC AGT TCC TCT GAG CTG AST CAG
GAS CC-3' [SEQ ID NO: 33]

Vλ8b: 5'-GGC GGT GGT GGA TCA GGC GGC GGA GGA TCT GGC GGA
GGT GGC AGC GGT GGT GGA GGC AGT CAG TCT GYY CTG AYT CAG
CCT-3' [SEQ ID NO: 34]

Vλ9b: 5'-GGC GGT GGT GGA TCA GGC GGC GGA GGA TCT GGC GGA
GGT GGC AGC GGT GGT GGA GGC AGT AAT TTT ATG CTG ACT CAG
CCC C-3' [SEQ ID NO: 35]

3'-primers (forward primers):

Vλ1f: 5'-GAG ATG GTG CAC GAT GCA CAG TTG AAG TGA ACT TGC
GGG GTT TTT CAG TAT CTA CGA TTC TAG GAC GGT SAS CTT GGT
CC-3' [SEQ ID NO: 36]

Vλ2f: 5'-GAG ATG GTG CAC GAT GCA CAG TTG AAG TGA ACT TGC
GGG GTT TTT CAG TAT CTA CGA TTC GAG GAC GGT CAG CTG GGT
GC-3' [SEQ ID NO: 37]

c) Light-chain Vκ

5'-primers (back primers):

Vκ1b: 5'-GGC GGT GGT GGA TCA GGC GGC GGA GGA TCT GGC GGA
GGT GGC AGC GGT GGT GGA GGC AGT GAC ATC CRG DTG ACC CAG
TCT CC-3' [SEQ ID NO: 38]

Vκ2b: 5'-GGC GGT GGT GGA TCA GGC GGC GGA GGA TCT GGC GGA
GGT GGC AGC GGT GGT GGA GGC AGT GAA ATT GTR WTG ACR CAG
TCT CC-3' [SEQ ID NO: 39]

Vκ3b: 5'-GGC GGT GGT GGA TCA GGC GGC GGA GGA TCT GGC GGA
GGT GGC AGC GGT GGT GGA GGC AGT GAT ATT GTG MTG ACB CAG
WCT CC-3' [SEQ ID NO: 40]

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Vk4f: 5'-GAG ATG GTG CAC GAT GCA CAG TTG AAG TGA ACT TGC
GGG GTT TTT CAG TAT CTA CGA TTC TTT AAT CTC CAG TCG TGT
CC-3' [SEQ ID NO: 45]

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Table 3. Sequence of oligonucleotides for modifying the cloning vector pACT2.

a) The sense strand

5'-TCGA GGC GGT GGT GGA TCA GGC GGC GGA GGA TCT GGC GGA
GGT GGC AGC GGT GGT GGA GGC AGT GCG CGC TTA ATT AA-3'
[SEQ ID NO: 46]

b) The antisense strand

5'-TCG ATT AAT TAA GCG CGC ACT GCC TCC ACC ACC GCT GCC
ACC TCC GCC AGA TCC TCC GCC GCC TGA TCC ACC ACC GCC-3'
[SEQ ID NO: 47]

11390
Table 4. Sequence of PCR primers that include loxP sites for amplifying heavy- and light-chain genes of human antibody.

(B= C/G/T; D= A/G/T; K= G/T; M= A/C; R= A/G; S= C/G; W= A/T; and Y= C/T)

a) Heavy-chain VH

5'-primers (back primers):

VH1b: 5'-ACC CCA CCA AAC CCA AAA AAA GAG ATC TGT ATG GCT
TAC CCA TAC GAT GTT CCA GAT TAC CAG GTG CAG CTG CAG GAG
TCS G-3' [SEQ ID NO: 14]

VH2b: 5'-ACC CCA CCA AAC CCA AAA AAA GAG ATC TGT ATG GCT
TAC CCA TAC GAT GTT CCA GAT TAC CAG GTA CAG CTG CAG CAG
TCA-3' [SEQ ID NO: 15]

VH3b: 5'-ACC CCA CCA AAC CCA AAA AAA GAG ATC TGT ATG GCT
TAC CCA TAC GAT GTT CCA GAT TAC CAG GTG CAG CTA CAG CAG
TGG G-3' [SEQ ID NO: 16]

VH4b: 5'-ACC CCA CCA AAC CCA AAA AAA GAG ATC TGT ATG GCT
TAC CCA TAC GAT GTT CCA GAT TAC GAG GTG CAG CTG KTG GAG
WCY-3' [SEQ ID NO: 17]

VH5b: 5'-ACC CCA CCA AAC CCA AAA AAA GAG ATC TGT ATG GCT
TAC CCA TAC GAT GTT CCA GAT TAC CAG GTC CAG CTK GTR CAG
TCT GG-3' [SEQ ID NO: 18]

VH6b: 5'-ACC CCA CCA AAC CCA AAA AAA GAG ATC TGT ATG GCT
TAC CCA TAC GAT GTT CCA GAT TAC CAG RTC ACC TTG AAG GAG
TCT G-3' [SEQ ID NO: 19]

VH7b: 5'-ACC CCA CCA AAC CCA AAA AAA GAG ATC TGT ATG GCT
TAC CCA TAC GAT GTT CCA GAT TAC CAG GTG CAG CTG GTG SAR
TCT GG-3' [SEQ ID NO: 20]

3'-primers (forward primers):

VH1'f: 5'-ACT GCC TCC ACC TGA TAA CTT CGT ATA GCA TAT ATT
ATA CGA AGT TAT TGA TCC ACC ACC GCC TGA GGA GAC RGT GAC
CAG GGT G-3' [SEQ ID NO: 48]

VH2'f: 5'-ACT GCC TCC ACC TGA TAA CTT CGT ATA GCA TAT ATT
ATA CGA AGT TAT TGA TCC ACC ACC GCC TGA GGA GAC GGT GAC
CAG GGT T-3' [SEQ ID NO: 49]

VH3'f: 5'-ACT GCC TCC ACC TGA TAA CTT CGT ATA GCA TAT ATT
ATA CGA AGT TAT TGA TCC ACC ACC GCC TGA AGA GAC GGT GAC
CAT TGT-3' [SEQ ID NO: 50]

VH4'f: 5'-ACT GCC TCC ACC TGA TAA CTT CGT ATA GCA TAT ATT
ATA CGA AGT TAT TGA TCC ACC ACC GCC TGA GGA GAC GGT GAC
CGT GGT CC-3' [SEQ ID NO: 51]

VH5'f: 5'-ACT GCC TCC ACC TGA TAA CTT CGT ATA GCA TAT ATT
ATA CGA AGT TAT TGA TCC ACC ACC GCC GGT TGG GGC GGA TGC
ACT CC-3' [SEQ ID NO: 52]

VH6'f: 5'-ACT GCC TCC ACC TGA TAA CTT CGT ATA GCA TAT ATT
ATA CGA AGT TAT TGA TCC ACC ACC GCC SGA TGG GCC CTT GGT
GGA RGC-3' [SEQ ID NO: 53]

b) Light-chain V λ

5'-primers (back primers):

V λ 1'b: 5'-GGC GGT GGT GGA TCA ATA ACT TCG TAT AAT ATA TGC
TAT ACG AAG TTA TCA GGT GGA GGC AGT CAG TCT GTS BTG ACG
CAG CCG CC-3' [SEQ ID NO: 54]

V λ 2'b: 5'-GGC GGT GGT GGA TCA ATA ACT TCG TAT AAT ATA TGC
TAT ACG AAG TTA TCA GGT GGA GGC AGT TCC TAT GWG CTG ACW
CAG CCA C-3' [SEQ ID NO: 55]

V λ 3'b: 5'-GGC GGT GGT GGA TCA ATA ACT TCG TAT AAT ATA TGC
TAT ACG AAG TTA TCA GGT GGA GGC AGT TCC TAT GAG CTG AYR
CAG CYA CC-3' [SEQ ID NO: 56]

V λ 4'b: 5'-GGC GGT GGT GGA TCA ATA ACT TCG TAT AAT ATA TGC
TAT ACG AAG TTA TCA GGT GGA GGC AGT CAG CCT GTG CTG ACT
CAR YC-3' [SEQ ID NO: 57]

V λ 5'b: 5'-GGC GGT GGT GGA TCA ATA ACT TCG TAT AAT ATA TGC
TAT ACG AAG TTA TCA GGT GGA GGC AGT CAG DCT GTG GTG ACY
CAG GAG CC-3' [SEQ ID NO: 58]

Vλ6'b: 5'-GGC GGT GGT GGA TCA ATA ACT TCG TAT AAT ATA TGC
TAT ACG AAG TTA TCA GGT GGA GGC AGT CAG CCW GKG CTG ACT
CAG CCM CC-3' [SEQ ID NO: 59]

Vλ7'b: 5'-GGC GGT GGT GGA TCA ATA ACT TCG TAT AAT ATA TGC
TAT ACG AAG TTA TCA GGT GGA GGC AGT TCC TCT GAG CTG AST
CAG GAS CC-3' [SEQ ID NO: 60]

Vλ8'b: 5'-GGC GGT GGT GGA TCA ATA ACT TCG TAT AAT ATA TGC
TAT ACG AAG TTA TCA GGT GGA GGC AGT CAG TCT GYY CTG AYT
CAG CCT-3' [SEQ ID NO: 61]

Vλ9'b: 5'-GGC GGT GGT GGA TCA ATA ACT TCG TAT AAT ATA TGC
TAT ACG AAG TTA TCA GGT GGA GGC AGT AAT TTT ATG CTG ACT
CAG CCC C-3' [SEQ ID NO: 62]

3'-primers (forward primers):

Vλ1'f: 5'-CTT CGT ATA ATG TAT GCT ATA CGA AGT TAT TAG GAC
GGT SAS CTT GGT CC-3' [SEQ ID NO: 63]

Vλ2'f: 5'-CTT CGT ATA ATG TAT GCT ATA CGA AGT TAT GAG GAC
GGT CAG CTG GGT GC-3' [SEQ ID NO: 64]

c) Light-chain Vκ

5'-primers (back primers):

Vκ1'b: 5'-GGC GGT GGT GGA TCA ATA ACT TCG TAT AAT ATA TGC
TAT ACG AAG TTA TCA GGT GGA GGC AGT GAC ATC CRG DTG ACC
CAG TCT CC-3' [SEQ ID NO: 65]

Vκ2'b: 5'-GGC GGT GGT GGA TCA ATA ACT TCG TAT AAT ATA TGC
TAT ACG AAG TTA TCA GGT GGA GGC AGT GAA ATT GTR WTG ACR
CAG TCT CC-3' [SEQ ID NO: 66]

Vκ3'b: 5'-GGC GGT GGT GGA TCA ATA ACT TCG TAT AAT ATA TGC
TAT ACG AAG TTA TCA GGT GGA GGC AGT GAT ATT GTG MTG ACB
CAG WCT CC-3' [SEQ ID NO: 67]

1. The first step is to identify the problem or goal. This involves understanding the current situation, identifying the key issues, and setting clear objectives.

Vk4'f: 5'-CTT CGT ATA ATG TAT GCT ATA CGA AGT TAT TTT AAT
CTC CAG TCG TGT CC-3' [SEQ ID NO: 72]

3'-primers (forward primers) for 2nd PCR of V λ and V κ :

Vλ/Vκf: 5'-GAG ATG GTG CAC GAT GCA CAG TTG AAG TGA ACT TGC
GGG GTT TTT CAG TAT CTA CGA TAA CTT CGT ATA ATG TAT GCT-
3' [SEQ ID NO: 73]

105-7 B2

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SEQUENCE LISTING

<110> Zhu, Li
Hua, Shaobing

<120> GENERATION OF HIGHLY DIVERSE LIBRARY OF EXPRESSION
VECTORS VIA HOMOLOGOUS RECOMBINATION IN YEAST

<130> 25636-702 Seq Listing

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<210> 2

<211> 34

<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence: LoxP511

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34

<210> 3

<211> 34

<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence: LoxC2

<400> 3

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<213> Artificial Sequence

<223> Description of Artificial Sequence: loxP1

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<213> Artificial Sequence

<223> Description of Artificial Sequence: LoxP2

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<213> Artificial Sequence

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<213> Artificial Sequence

<223> Description of Artificial Sequence: LoxP4

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<211> 34

<223> Description of Artificial Sequence: LoxP9

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<210> 13

<211> 34

<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence: LoxP10

<400> 13

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34

<210> 14

<211> 82

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR primer

<400> 14

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caggtgcagc tgcaggagtc sg 82

<210> 15

<211> 81

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR primer

<400> 15

acccaccaa acccaaaaaa agagatctgt atggcttacc catac gatgt tccagattac 60
caggtacagc tgcagcagtc a 81

<210> 16

<211> 82

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR primer

<400> 16
acccaccaa acccaaaaaa agagatctgt atggcttacc catacgatgt tccagattac 60
caggtgcagc tacagcagtg gg 82

<210> 17
<211> 81
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer

<400> 17
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gaggtgcagc tgktggagwc y 81

<210> 18
<211> 83
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer

<400> 18
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caggtccagc tkgttcagtc tgg 83

<210> 19
<211> 82
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer

<400> 19
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cagrtcacct tgaaggagtc tg 82

<210> 20
<211> 83
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer

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caggtgcagc tggtsartc tgg 83

<210> 21
<211> 82
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer

<400> 21
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tgaggagacr gtgaccaggg tg 82

<210> 22
<211> 82
<212> DNA
<213> Artificial Sequence

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<210> 23
<211> 81
<212> DNA
<213> Artificial Sequence

<220>
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<400> 23
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tgaagagacg gtgaccattg t 81

<210> 24
<211> 83
<212> DNA
<213> Artificial Sequence

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<400> 24
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<210> 25
<211> 80
<212> DNA
<213> Artificial Sequence

<220>
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<210> 26
<211> 81
<212> DNA
<213> Artificial Sequence

<220>
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sgatggggccc ttggtggarg c 81

<210> 27
<211> 83
<212> DNA
<213> Artificial Sequence

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<223> Description of Artificial Sequence: PCR primer

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cagtctgtsb tgacgcagcc gcc 83

<210> 28
<211> 82
<212> DNA
<213> Artificial Sequence

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<223> Description of Artificial Sequence: PCR primer

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tcctatgwg c tgacwcagcc ac 82

<210> 29
<211> 83
<212> DNA
<213> Artificial Sequence

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<223> Description of Artificial Sequence: PCR primer

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tcctatgagc tgayrcagcy acc 83

<210> 30
<211> 80
<212> DNA
<213> Artificial Sequence

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<223> Description of Artificial Sequence: PCR primer

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cagcctgtgc tgactcaryc 80

<210> 31
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<212> DNA
<213> Artificial Sequence

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<223> Description of Artificial Sequence: PCR primer

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<210> 32
<211> 83
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer

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tcctctgagc tgastcagga scc 83

<210> 34
<211> 81
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer

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cagtctgyyc tgaytcagcc t 81

<210> 35
<211> 82
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer

<400> 35
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aattttatgc tgactcagcc cc 82

<210> 36
<211> 80
<212> DNA
<213> Artificial Sequence

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<223> Description of Artificial Sequence: PCR primer

<400> 36
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taggacggts ascttggtcc 80

<210> 37
<211> 80
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer

<400> 37
gagatggtgc acgatgcaca gttgaagtga acttgcgggg tttttcagta tctacgattc 60
gaggacggtc agctgggtgc 80

<210> 38
<211> 83
<212> DNA
<213> Artificial Sequence

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<223> Description of Artificial Sequence: PCR primer

<400> 38
ggcgggtggtg gatcaggcgg cggaggatct ggcggaggtg gcagcgggtg tggaggcagt 60
gacatccrgd tgaccagtc tcc 83

<210> 39
<211> 83
<212> DNA
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<220>
<223> Description of Artificial Sequence: PCR primer

<400> 39
ggcgggtggtg gatcaggcgg cggaggatct ggcggaggtg gcagcgggtg tggaggcagt 60
gaaattgtrw tgacrcagtc tcc 83

<210> 40
<211> 83
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer

<400> 40
ggcgggtggtg gatcaggcgg cggaggatct ggcggaggtg gcagcgggtg tggaggcagt 60
gatattgtgm tgacbcagwc tcc 83

<210> 41
<211> 82
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer

<400> 41
ggcgggtggtg gatcaggcgg cggaggatct ggcggaggtg gcagcgggtg tggaggcagt 60
gaaacgacac tcacgcagtc tc 82

<210> 42
<211> 80
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer

<400> 42
gagatggtgc acgatgcaca gttgaagtga acttgcgggg tttttcagta tctacgattc 60
tttgatttcc accttggtcc 80

<210> 43
<211> 80
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer

<400> 43
gagatggtgc acgatgcaca gttgaagtga acttgcgggg tttttcagta tctacgattc 60
tttgatctcc accttggtcc 80

<210> 44
<211> 80
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer

<400> 44
gagatggtgc acgatgcaca gttgaagtga acttgcgggg tttttcagta tctacgattc 60
tttgatatcc actttggtcc 80

<210> 45
<211> 80
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer

<400> 45
gagatggtgc acgatgcaca gttgaagtga acttgcgggg tttttcagta tctacgattc 60
tttaatctcc agtcgtgtcc 80

<210> 46
<211> 78
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer

<400> 46
tcgaggcggg ggtggatcag gcggcggagg atctggcgga ggtggcagcg gtggtggagg 60
cagtgcgcgc ttaattaa 78

<210> 47
<211> 78
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer

<400> 47
tcgattaatt aagcgcgcac tgcctccacc accgctgcc cctccgccag atcctccgcc 60
gcctgatcca ccaccgcc 78

<210> 48
<211> 85
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer

<400> 48
actgcctcca cctgataact tcgtatagca tatattatac gaagttattg atccaccacc 60
gcctgaggag acrgtgacca ggggtg 85

<210> 49
<211> 85
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer

<400> 49
actgcctcca cctgataact tcgtatagca tatattatac gaagttattg atccaccacc 60
gcctgaggag acggtgacca ggggtt 85

<210> 50
<211> 84
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer

<400> 50
actgcctcca cctgataact tcgtatagca tatattatac gaagttattg atccaccacc 60
gcctgaagag acggtgacca ttgt 84

<210> 51
<211> 86
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer

<400> 51
actgcctcca cctgataact tcgtatagca tatattatac gaagttattg atccaccacc 60
gcctgaggag acggtgaccg tgggcc 86

<210> 52
<211> 83
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer

<400> 52
actgcctcca cctgataact tcgtatagca tatattatac gaagttattg atccaccacc 60
gccggttggg gcggatgcac tcc 83

<210> 53
<211> 84
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer

<400> 53
actgcctcca cctgataact tcgtatagca tatattatac gaagttattg atccaccacc 60
gccsgatggg cccttggtgg argc 84

<210> 54
<211> 86
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer

<400> 54
ggcgggtggtg gatcaataac ttctgtataat atatgctata cgaagttatc aggtggaggg 60
agtcagtctg tsbtgacgca gccgcc 86

<210> 55
<211> 85
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer

<400> 55
ggcgggtggtg gatcaataac ttctgtataat atatgctata cgaagttatc aggtggaggg 60
agttcctatg wgctgacwca gccac 85

<210> 56
<211> 86
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer

<400> 56

ggcgggtggtg gatcaataac ttcgtataat atatgctata cgaagttatc aggtggaggc 60
agttcctatg agctgayrca gcyacc 86

<210> 57

<211> 83

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR primer

<400> 57

ggcgggtggtg gatcaataac ttcgtataat atatgctata cgaagttatc aggtggaggc 60
agtcagcctg tgctgactca ryc 83

<210> 58

<211> 86

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR primer

<400> 58

ggcgggtggtg gatcaataac ttcgtataat atatgctata cgaagttatc aggtggaggc 60
agtcagdctg tggtgacyca ggagcc 86

<210> 59

<211> 86

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR primer

<400> 59

ggcgggtggtg gatcaataac ttcgtataat atatgctata cgaagttatc aggtggaggc 60
agtcagccwg kgctgactca gccmcc 86

<210> 60

<211> 86

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR primer

<400> 60
ggcgggtggtg gatcaataac ttcgtataat atatgctata cgaagttatc aggtggaggc 60
agttcctctg agctgastca ggascc 86

<210> 61
<211> 84
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer

<400> 61
ggcgggtggtg gatcaataac ttcgtataat atatgctata cgaagttatc aggtggaggc 60
agtcagtctg yyctgaytca gcct 84

<210> 62
<211> 85
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer

<400> 62
ggcgggtggtg gatcaataac ttcgtataat atatgctata cgaagttatc aggtggaggc 60
agtaatttta tgctgactca gcccc 85

<210> 63
<211> 50
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer

<400> 63
cttcgtataa tgtatgctat acgaagttat taggacggtg ascttggtcc 50

<210> 64
<211> 50
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer

<400> 64

cttcgtataa tgtatgctat acgaagttat gaggacggtc agctgggtgc

50

<210> 65

<211> 86

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR primer

<400> 65

ggcgggtggtg gatcaataac ttcgtataat atatgctata cgaagttatc aggtggaggc 60
agtgacatcc rgdtgacca gtctcc 86

<210> 66

<211> 86

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR primer

<400> 66

ggcgggtggtg gatcaataac ttcgtataat atatgctata cgaagttatc aggtggaggc 60
agtgaaattg trwtgacrcg gtctcc 86

<210> 67

<211> 86

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR primer

<400> 67

ggcgggtggtg gatcaataac ttcgtataat atatgctata cgaagttatc aggtggaggc 60
agtgatattg tgmtgacbca gwctcc 86

<210> 68

<211> 85

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR primer

<400> 68

ggcgggtggtg gatcaataac ttcgtataat atatgctata cgaagttatc aggtggaggc 60

agtgaacga cactcacgca gtctc

85

<210> 69

<211> 50

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR primer

<400> 69

cttcgtataa tgtatgctat acgaagttat tttgatttcc accttggtcc

50

<210> 70

<211> 50

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR primer

<400> 70

cttcgtataa tgtatgctat acgaagttat tttgatctcc ascttggtcc

50

<210> 71

<211> 50

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR primer

<400> 71

cttcgtataa tgtatgctat acgaagttat tttgatatcc acttttggtcc

50

<210> 72

<211> 50

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR primer

<400> 72

cttcgtataa tgtatgctat acgaagttat tttaatctcc agtcgtgtcc

50

<210> 73

<211> 78

<212> DNA
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR primer

<400> 73

gagatggtgc acgatgcaca gttgaagtga acttgcgggg tttttcagta tctacgataa 60
cttcgtataa tgtatgct 78

<210> 74

<211> 63

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Suc 2 signal

<400> 74

atgcttttgc aagcttttct tttccttttg gctggttttg cagccaaaat atctgcatca 60
atg 63

<210> 75

<211> 20

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Linker peptide

<400> 75

Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly
1 5 10 15

Gly Gly Gly Ser
20